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# Inverting Filter Centrifuge HF





## HEINKEL DRYING AND SEPARATION GROUP

The companies making up the HEINKEL DRYING AND SEPARATION GROUP between them have over 130 years of experience, offering innovative and dependable solutions in filtration and centrifugal technology, nutsche and vacuum drying and mixing.

Our brands BOLZ-SUMMIX, COMBER, ELLERWERK, GFT and HEINKEL have excellent reputation around the world.

This group of international companies boasts one of the widest product ranges for the pharmaceuticals, fine chemicals, chemical and food products industries:

- Lab Centrifuges
- Vertical Centrifuges
- Sedimentation and Classifying Centrifuges
- Horizontal Peeler Centrifuges
- Inverting Filter Centrifuges
- Tubular Filter and Ball Segment Valves
- Nutsche Filters and Filter Dryers
- Paddle Dryers
- Pan Dryers and Central Shaft Dryers
- Conical Screw Dryers

We are specialized in designing, manufacturing, selling and providing comprehensive aftersales service for high quality components and full systems for separating solids from liquids.

Our global sales and aftersales service network gives you the benefit of direct sales, dedicated sales organizations and well established sales partners in many different countries.

You can benefit from our professionalism, our staff expertise that has been built up over many years, and the financial strength of an international group coupled with the flexibility and rapid response of a small and medium sized enterprise.

From day one of testing your product on our laboratory equipment to the point at which you are ready to commission and launch the system, our team of experts will be there to support you all the way.

After these stages our aftersales service staff, with their many years of experience will take over to ensure that your production system is available in a consistent and sustainable way.

Complete system solutions comprising of a centrifuge, dryer and specific process equipment, with common control system can be integrated seamlessly for you by the Heinkel Group in our role as general supplier.

Your thorough understanding of both product and process combined with our long standing know-how in the areas of process engineering and the manufacture of process equipment and systems are the two essential ingredients for joint success.



Inverting Filter Centrifuge HF

## The HEINKEL Inverting Filter Centrifuge HF

The best possible quality standard in classic solids-liquids-separation

**HEINKEL developed the inverting filter centrifuge in the early 70's. The new technology produced residual heel free high quality product in an automated manner. The technology has stood the test of time and is accepted as the standard solution in the field of solid liquid separation. Today we benefit from many years of experience.**

### Many years of experience in building Inverting Filter Centrifuges

The core design upon which our reliable and robust design was based of discharging separated products by inverting the filter cloth is at the heart of our technology today. HEINKEL Inverting Filter Centrifuges have been used in numerous applications to separate high quality solid materials. Continuous research and optimization of the centrifuge and its associated sub-systems are the foundation of today's very high quality standard.

In order to fulfill the demands of the pharmaceutical industry, HEINKEL has eliminated hydraulic systems with Inverting Filter Centrifuge design. Industry standards including cGMP or GAMP have been recognized and used as the guide for our design team. Our achievements include the development of industry leading CIP systems and accessibility through the development of fully moveable housings.

### HEINKEL sets standards

Through it's completely sealed process chamber and fully automated, uninterrupted mode of operation; HEINKEL Inverting Filter Centrifuges fulfill the highest safety standards and guarantee maximum safety for the operating personnel, the environment and the product.

The safety level of a HEINKEL Inverting Filter Centrifuge always conforms to current regulations. We strive to set centrifuge technology standard.



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# The Inverting Filter Centrifuge Principle

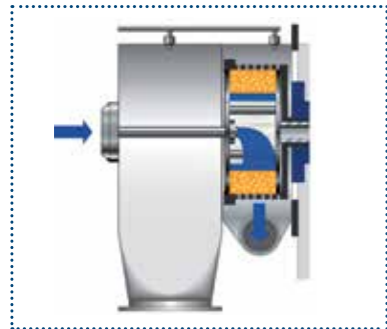
Technology for optimum efficiency



## Filling

The slurry (liquid stream containing solid to be separated) is delivered to the process chamber which is a rotating drum a feed pipe.

The filling step is usually controlled through a load cell based weight control system optionally control can be by time or volume.



## Washing

Wash liquid is introduced and controlled in the same manner as the slurry.

Due to the homogeneous cake build-up each part of the solid cake will be washed to the same quality.



## Spinning

The drum spins at a pre-set value chosen from the speed range of the individual machine.

The filtrate passes through the filter cloth which lines the process chamber and the solids collect and build up on the filter cloth to form a cake of material.



## Discharging

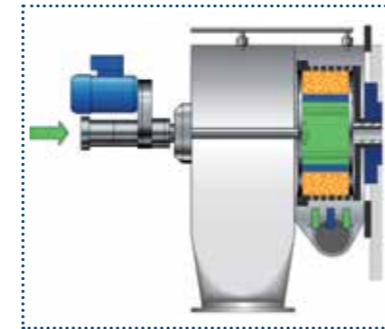
The separated solids are discharged by inverting the filter cloth through the axial movement of the shaft, while the bowl remains rotating at a low speed.



## Cleaning

Certifiable cleaning of the Inverting Filter Centrifuge HF is effectively carried out in a closed condition through fully automated CIP-cleaning systems.

Product change-over is quickly and easily completed.



## PAC

Where products have a high proportion of fine particles (<math><20 \mu\text{m}</math>) and therefore high filtration resistance, a pressure of up to 6 bar can be applied to the inside of the centrifuge bowl. Thus, the advantages of centrifugation and differential pressure filtration can be combined.

The residual moisture of difficult to dewater products can be reduced by an additional 10–20% compared with centrifugation alone.

The time in the subsequent dryer is shorter and the centrifuged product is usually more friable and therefore can be discharged more easily.



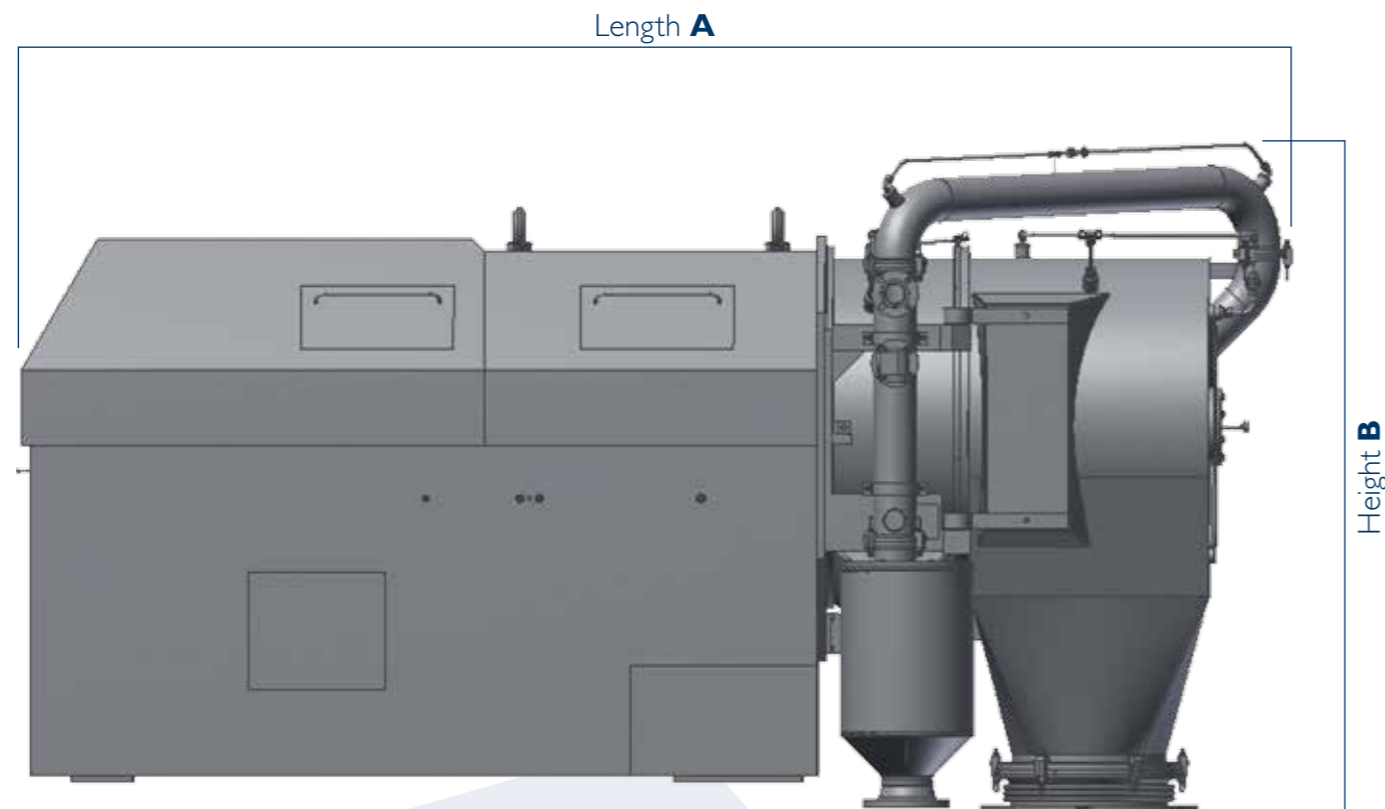
## Advantages

- Homogeneous cake build-up
- No compression of the solids cake
- Homogeneous drainage results
- No vibration
- Optimum filling process
- High rotational speeds during spinning with maximum drum load possible
- Homogeneous drainage results
- Fully flexible process recipe management
- Homogeneous washing results through the even cake structure
- Comparatively low consumption of wash medium and reduce amounts of post process wash filtrate to be processed
- Product protected during discharge (no damage to crystal structure)
- No residual heel
- No manual emptying of the drum and opening of the process housings necessary
- Clean filter cloth for the next filling process



## Technical Data

in detail



Technical data	<b>HF 300.I</b>	<b>HF 450.I</b>	<b>HF 600.I</b>	<b>HF 800.I</b>	<b>HF 1000.I</b>	<b>HF 1300.I</b>
Inverting Filter Centrifuges						
Basket diameter (mm)	300	450	600	800	1000	1300
Filtering surface area (m <sup>2</sup> )	0,1	0,31	0,41	0,85	1,26	2,0
Nominal volume (ltr.)	6,5	26	52	120	200	350
Speed max. (l/min)	3000	2300	1940	1600	1270	1000
Spinning speed (x g)	1500	1322	1255	1138	900	722
Weight (kg)	1400	3250	3500	6200	8900	10700
Length (mm) <b>A</b>	2025	3095	3095	4080	5090	5950
Width closed (mm)	930	1605	1605	2065	2290	2600
Width opened (mm)	1170	2450	2450	3190	3735	4600
Height (mm) <b>B</b>	1065	1735	1735	1900	2550	3300

Inverting Filter Centrifuge HF

## After Sales Service

### Product Support

#### Wearing and spare parts

Worldwide delivery ex stock and web-shop for orders

#### Engineering support

Solutions for all mechanical, control and process engineering questions

#### Repairs

Worldwide on-site within 24/7

### Solution Support

#### Conversions and retrofits

ATEX upgrades, cGMP upgrades, retrofitting of pressurised filling pipes, controllers, displays, drive system replacements, safety services

#### Maintenance contracts

After sales service with individually specified scope

#### Process engineering optimisation

Optimisation of comprehensive process engineering processes

### Sales Support

#### Installation / commissioning

On-site installation  
Mechanical and electrical testing, test runs

#### Training

Staff training on operation, control and troubleshooting

#### Maintenance

Remote maintenance and on-site maintenance

### Business Support

#### Used machines

Partial or full refurbishing of used machines from all manufacturers

#### Rental and pilot systems

for rapid compensation of broken down systems and basic tests

#### Financing

Hire-purchase, leasing



Service to us means doing everything so that your centrifuge, dryer, mixer and fittings will work reliably and safely for producing an optimum product.

We feel responsible for our machines and systems - from initial consulting through delivery, installation and maintenance up to the end of the entire life cycle.

Through the partnership-like cooperation with our customers around the world we jointly provide top performance, contributing significantly to your success.

In a world in which markets and people move together even more closely, our group of companies can assist you by providing top quality products, services and staff.

As one of the international leading vendors we endeavour to be as close as possible to our customers thereby ensuring utmost satisfaction.

Firmly embedded on all levels of our company, we endeavour to provide high quality, accuracy and reliability every day.

Our staff is continually trained so as to meet all aspects of the high process engineering and statutory requirements of the pharmaceutical, chemistry and metal industries.